

Patent Application 09/662,740
Docket No. P13901US

AMENDMENTS TO THE CLAIMS

The listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently amended) A method for attenuating an interferer of substantially known spectrum in a communication signal which has been transmitted through a transmission channel and processed through a signal-processing receiver chain, said method comprising:

generating, from the substantially known spectrum and independently of the communication signal, at least one image representative of a replica of the interferer after processing through the signal-processing receiver chain;

subtracting the image from the processed communication signal to produce a subtraction signal;

calculating a quality-indicative parameter of the processed communication signal;

computing said quality-indicative parameter for the subtraction signal; and

selecting, in relation to the quality-indicative parameters, one of the processed communication signal and subtraction signal for further processing through the receiver.

2. (Currently amended) A method for attenuating an interferer as recited in claim 1, wherein:

generating at least one image comprises producing, from the substantially known spectrum and independently of the communication signal, a plurality of different images each representative of a replica of the interferer after processing through the signal-processing receiver chain;

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said subtracting comprises, for each image of the plurality of different images, subtracting the image from the processed communication signal to produce a corresponding subtraction signal;

said computing comprises computing said quality-indicative parameter for every subtraction signal; and

said selection comprises selecting, in relation to the quality-indicative parameters, one of the processed communication signal and subtraction signals for further processing through the receiver.

3. (Original) A method for attenuating an interferer as recited in claim 1, wherein:

generating at least one image comprises feedback controlling, in relation to the quality-indicative parameter of the subtraction signal, at least one feature of the image to improve said quality-indicative parameter of the subtraction signal.

4. (Original) A method for attenuating an interferer as recited in claim 3, wherein said at least one feature is an amplitude of the image.

5. (Original) A method for attenuating an interferer as recited in claim 3, wherein said at least one feature is a phase of the image.

6. (Original) A method for attenuating an interferer as recited in claim 1, wherein generating at least one image comprises:

generating said replica of the interferer; and
processing said replica through transfer functions reproducing the signal-processing receiver chain to produce a processed interferer replica.

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7. (Original) A method for attenuating an interferer as recited in claim 6, wherein generating at least one image further comprises amplifying the processed interferer replica to produce the image.

8. (Currently amended) A method for attenuating an interferer as recited in claim 1, wherein generating at least one image representative of a replica of the interferer after processing through the signal-processing receiver chain said replica comprises generating a silent replica of the interferer including no voice or data component.

9. (Original) A method for attenuating an interferer as recited in claim 1, wherein:

- the interferer is a narrowband interferer;
- the communication signal is a spread spectrum signal;
- the signal-processing receiver chain incorporates a despreading scheme whose function is to convert the spread spectrum signal to a despread signal; and
- generating at least one image comprises:
 - producing a replica of the narrowband interferer;
 - processing said replica through transfer functions reproducing the signal-processing receiver chain including the despreading scheme.

10. (Currently amended) A method for attenuating an interferer as recited in claim 9, wherein the narrowband ~~interferer~~ interferer is an AMPS interferer, and the spread spectrum signal is a CDMA spread spectrum signal.

11. (Currently amended) A method for attenuating an interferer as recited in claim 10, wherein the quality-indicative parameters are BER measurements of the despread signal and subtraction signal.

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12. (Original) A method for attenuating an interferer as recited in claim 10, wherein producing a replica of the AMPS interferer comprises producing a silent replica of the AMPS interferer including no voice or data component.

13. (Currently amended) A method for attenuating an interferer as recited in claim 6, comprising both generating said replica of the interferer and processing said replica through transfer functions are conducted through through a digital implementation.

14. (Currently amended) A method for attenuating an interferer as recited in claim 13, wherein said digital implementation is selected from the a group consisting of software, firmware and ASIC.

15. (Currently amended) A method for attenuating an interferer from a communication signal which has been transmitted through a transmission channel and processed through a signal-processing receiver chain, said method comprising:

generating a plurality of images of the interferer having different features being the phase and the amplitude of the images;

for each interferer image, subtracting said interferer image from the processed communication signal to produce a corresponding subtraction signal;

calculating a quality-indicative parameter of the processed communication signal;

computing said quality-indicative parameter for every subtraction signal; and

selecting, in relation to the quality-indicative parameters, one of the processed communication signal and subtraction signals for further processing through the signal-processing receiver chain.

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16-17. (Canceled)

18. (Currently amended) A method for attenuating an interferer as recited in claim 15, wherein:

- the interferer is selected from ~~the~~ a group consisting of a narrowband AMPS interferer, a TDMA interferer and a GSM interferer;
- the communication signal is a CDMA spread spectrum signal;
- the signal-processing receiver chain incorporates a despreading scheme whose function is to convert the CDMA spread spectrum signal to a despread baseband signal; and
- the quality-indicative parameters are BER measurements of the despread baseband signal and subtraction signals.

19. (Currently amended) A method for attenuating an interferer as recited in claim 15, wherein generating ~~one~~ the plurality of said images comprises feedback controlling, in relation to the quality-indicative parameter of one of the subtraction signals corresponding to ~~said one~~ the plurality of images, the features of ~~said one~~ the plurality of images in view of improving the quality-indicative parameter of ~~said one~~ every subtraction signal.

20. (Currently amended) A method for attenuating an interferer as recited in claim 19, wherein feedback control controlling of the feature of said one image comprises controlling the feature of said one image also in relation to said selection to improve the quality-indicative parameter of ~~said one~~ every subtraction signal until said subtraction signal is selected for further processing through the signal-processing receiver chain.

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21. (Currently amended) A method for attenuating an interferer from a communication signal which has been transmitted through a transmission channel and processed through a signal-processing receiver chain, said method comprising:

generating an image of the interferer;

subtracting the interferer image from the processed communication signal to produce a subtraction signal;

calculating a quality-indicative parameter of the processed communication signal;

computing said quality-indicative parameter for the subtraction signal; and

selecting, in relation to the quality-indicative parameters, one of the processed communication signal and subtraction signal for further processing through the signal-processing receiver chain;

wherein generating an image of the interferer comprises feedback controlling, in relation to the quality-indicative parameter of the subtraction signal, at least one feature of the image in view of improving said quality-indicative parameter of the subtraction signal.

22. (Currently amended) A method for attenuating an interferer as recited in claim 21, wherein feedback control controlling of at least one feature of the image comprises controlling said at least one feature also in relation to said selection selecting to improve the quality-indicative parameter of the subtraction signal until said subtraction signal is selected for further processing through the signal-processing receiver chain.

23. (Currently amended) A method for attenuating an interferer as recited in claim 21, wherein:

- the interferer is selected from the a group consisting of: a narrowband AMPS interferer, a TDMA interferer and a GSM interferer;

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- the communication signal is a CDMA spread spectrum signal;
- the signal-processing receiver chain incorporates a despreading scheme whose function is to convert the CDMA spread spectrum signal to a despread baseband signal; and
- the quality-indicative parameters are BER measurements of the despread baseband signal and subtraction signal.

24. (Currently amended) A device for attenuating an interferer of substantially known spectrum in a communication signal which has been transmitted through a transmission channel and processed through a signal-processing receiver chain, said device comprising:

a generator of at least one image representative of a replica of the interferer after processing through the signal-processing receiver chain, said generator having image generating means responsive to the substantially known spectrum of the interferer but having no connection to the communication signal;

a subtractor of the image from the processed communication signal to produce a subtraction signal;

a first calculator of a quality-indicative parameter of the processed communication signal;

a second calculator of said quality-indicative parameter for the subtraction signal; and

a selector of one of the processed communication signal and subtraction signal in relation to the quality-indicative parameters, for further processing through the signal-processing receiver chain.

25. (Canceled)

26. (Currently amended) A device for attenuating an interferer as recited in claim 25 24, wherein the image generating means further comprises an

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~~amplifier supplied with the processed interferer replica from the processor to~~
~~apply for applying a gain to said processed interferer replica~~ the at least one
image representative of a replica of the interferer and thereby produce the image.

27. (Original) A device for attenuating an interferer as recited in claim 24, wherein said replica is a silent replica of the interferer including no voice or data component.

28. (Currently amended) A device for attenuating an interferer as recited in claim 24, wherein:

- the interferer is a narrowband interferer;
- the communication signal is a spread spectrum signal;
- the signal-processing receiver chain incorporates a despreading scheme whose function is to convert the spread spectrum signal to a despread signal; and
- the generator comprises:
 - a sub-generator of a replica of the narrowband interferer;
 - ~~— a processor of said narrowband interferer replica, said processor comprising transfer functions reproducing the signal-processing receiver chain incorporating the despreading scheme.~~

29. (Currently amended) A device for attenuating an interferer as recited in claim 28, wherein the narrowband ~~interferer~~ interferer is an AMPS interferer, and the spread spectrum signal is an CDMA spread spectrum signal.

30. (Original) A device for attenuating an interferer as recited in claim 29, wherein the first and second calculators comprises respective BER measurement means.

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31. (Canceled)

32. (Currently amended) A device for attenuating an interferer as recited in claim 25 28, wherein said sub-generator ~~and said processor~~ comprises a digital implementation.

33. (Currently amended) A device for attenuating an interferer as recited in claim 32, wherein said digital implementation is selected from ~~the~~ a group consisting of: software, firmware and ASIC.

34. (Currently amended) A device for attenuating an interferer of substantially known spectrum in a communication signal which has been transmitted through a transmission channel and processed through a signal-processing receiver chain, said device comprising:

means for generating, in relation to the substantially known spectrum but independently of the communication signal, at least one image representative of a replica of the interferer after processing through the signal-processing receiver chain;

means for subtracting the image from the processed communication signal to produce a subtraction signal;

means for calculating a quality-indicative parameter of the processed communication signal;

means for calculating said quality-indicative parameter for the subtraction signal; and

means for selecting, in relation to the quality-indicative parameters, one of the processed communication signal and subtraction signal for further processing through the signal-processing receiver chain.

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35. (Currently amended) A device for attenuating an interferer from a communication signal which has been transmitted through a transmission channel and processed through a signal-processing receiver chain, said device comprising:

a generator of a plurality of images of the interferer having different features being the phase and the amplitude of the images;

for each interferer image, a subtractor of said interferer image from the processed communication signal to produce a corresponding subtraction signal;

a first calculator of a quality-indicative parameter of the processed communication signal;

a second calculator of said quality-indicative parameter for every subtraction signal; and

a selector of one of the processed communication signal and subtraction signals in relation to the quality-indicative parameters, for further processing through the signal-processing receiver chain.

36-37. (Canceled)

38. (Currently amended) A device for attenuating an interferer as recited in claim 35, wherein:

- the interferer is selected from the a group consisting of a narrowband AMPS interferer, a TDMA interferer and a GSM interferer;
- the communication signal is a CDMA spread spectrum signal;
- the signal-processing receiver chain incorporates a despreading scheme whose function is to convert the CDMA spread spectrum signal to a despread baseband signal; and
- the first and second calculators comprise respective BER measurement modules which, in operation, supply BER measurements of the despread baseband signal and subtraction signal.

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39. (Currently amended) A device for attenuating an interferer as recited in claim 35, wherein said generator comprises a feedback control of the features of ~~one of said~~ the plurality of images in relation to the quality-indicative parameter of the subtraction signal corresponding to ~~said one~~ the plurality of images, in view of improving the quality-indicative parameter of ~~said one~~ every subtraction signal.

40. (Original) A device for attenuating an interferer as recited in claim 39, wherein said feedback control is also responsive to the selection by said selector.

41. (Currently amended) A device for attenuating an interferer from a communication signal which has been transmitted through a transmission channel and processed through a signal-processing receiver chain, said device comprising:

means for generating a plurality of images of the interferer having different features;

for each interferer image, means for subtracting said interferer image from the processed communication signal to produce a corresponding subtraction signal;

means for calculating a quality-indicative parameter of the processed communication signal;

means for computing said quality-indicative parameter for every subtraction signal; and

means for selecting, in relation to the quality-indicative parameters, one of the processed communication signal and subtraction signals for further processing through the signal-processing receiver chain.

42. (Currently amended) A device for attenuating an interferer from a communication signal which has been transmitted through a transmission

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channel and processed through a signal-processing receiver chain, said device comprising:

- a generator of an image of the interferer;
 - a subtractor of the interferer image from the processed communication signal to produce a subtraction signal;
 - a first calculator of a quality-indicative parameter of the processed communication signal;
 - a second calculator of said quality-indicative parameter for the subtraction signal; and
 - a selector of one of the processed communication signal and subtraction signal in relation to the quality-indicative parameters, for further processing through the receiver;
- wherein the generator comprises a feedback control of at least one feature of the image in relation to the quality-indicative parameter of the subtraction signal, in view of improving said quality-indicative parameter of the subtraction signal.

43. (Original) A device for attenuating an interferer as recited in claim 42, wherein said feedback control is responsive to the selection by said selector.

44. (Currently amended) A device for attenuating an interferer as recited in claim 42, wherein:

- the interferer is selected from the a group consisting of a narrowband AMPS interferer, a TDMA interferer and a GSM interferer;
- the communication signal is a CDMA spread spectrum signal;
- the signal-processing receiver chain incorporates a despreading scheme whose function is to convert the CDMA spread spectrum signal to a despread baseband signal; and
- the first and second calculators comprise respective BER measurement modules.

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45. (Currently amended) A device for attenuating an interferer from a communication signal which has been transmitted through a transmission channel and processed through a signal-processing receiver chain, said device comprising:

means for generating an image of the interferer;

means for subtracting the interferer image from the processed communication signal to produce a subtraction signal;

means for calculating a quality-indicative parameter of the processed communication signal;

means for calculating said quality-indicative parameter for the subtraction signal; and

means for selecting, in relation to the quality-indicative parameters, one of the processed communication signal and subtraction signal for further processing through the receiver;

wherein the means for generating an image of the interferer comprises means for feedback controlling, in relation to the quality-indicative parameter of the subtraction signal, at least one feature of the image in view of improving said quality-indicative parameter of the subtraction signal.

46-49. (Canceled)